

WHAT IS CLAIMED IS:

1. A method of forming a device including emitters comprising:
exposing a first face of a sheet of bundled fiber segments to a reactive liquid to allow first ends of said fiber segments to react with said reactive liquid to remove material therefrom;
depositing a coating material on said first face with said material removed; and
exposing a second face of said sheet of bundled fiber segments to a reactive liquid to allow second ends of said fiber segments to react with said reactive liquid to remove material therefrom to expose said coating material.
2. The method of Claim 1, wherein said reactive liquid comprises a bath of HF acid.
3. The method of Claim 1, wherein said reactive liquid comprises a spray of HF Acid.
4. The method of Claim 1, wherein said coating material comprises a low electron affinity material taken from the group consisting of α -C, PdO_x, Pd, Mo, Ni, Cr, Cu, Au, Pt, Ir, diamond and the like.
5. The method of Claim 1, wherein said exposing said first face of said sheet of bundled fiber segments to a reactive liquid comprises removing material from said first ends to form modified ends and cells, wherein depositing said coating material on said first face with said material removed comprises depositing said coating material on said modified ends and in said cells.
6. The method of Claim 1, further comprising forming a dielectric layer on said coating material.
7. The method of Claim 6, further comprising mounting a substrate on said dielectric layer.
8. The method of Claim 1, wherein said exposed coating material forms an electron emitter.

9. The method of Claim 1, further comprising:
providing a transparent substrate having a transparent conductive material deposited thereon;
forming a dielectric spacer on said transparent substrate;
patterning and etching selective areas of said dielectric spacer to form chambers for containing color phosphors; and
aligning said etched selective areas with said exposed coating material to form a field emitter device.

10. The method of Claim 9, wherein a gate electrode is formed on said dielectric spacer.

11. The method of Claim 9, further comprising:
depositing a transparent conductive material on said transparent substrate, and
patterning said transparent conductive material.

12. The method of Claim 9, further comprising:
sealing said field emitter device after pumping said field emitter device into vacuum.

13. The method of Claim 1, wherein a gate electrode layer is deposited and patterned on the second face of said sheet of bundled fiber segments.

14. A field emission device comprising:
a cathode plate formed by:
exposing a first face of a sheet of bundled fiber segments to a reactive liquid to allow first ends of said fiber segments to react with said reactive liquid to remove material therefrom;
depositing a coating material on said first face with said material removed;
and

exposing a second face of said sheet of bundled fiber segments to a reactive liquid to allow second ends of said fiber segments to react with said reactive liquid to remove material therefrom to expose said coating material; and an anode plate formed by:

providing a transparent substrate having a transparent conductive material deposited thereon;

forming a dielectric spacer on said transparent substrate; and

etching selective areas of said dielectric spacer to form chambers for containing color phosphors;

said anode plate and said cathode plate formed together to align said etched selective areas with said exposed coating material.

15. The field emission device of Claim 14, wherein said transparent conductive material deposited on said transparent substrate is patterned to form anode electrodes.

16. The field emission device of Claim 14, wherein said formed together anode plate and cathode plate comprises a seal to allow said formed together anode plate and cathode plate to be pumped into vacuum.

17. The field emission device of Claim 14, wherein said reactive liquid comprises a bath of HF acid.

18. The field emission device of Claim 14, wherein said reactive liquid comprises a spray of HF Acid.

19. The field emission device of Claim 14, wherein said coating material comprises a low electron affinity material taken from the group consisting of α -C, PdO_x, Pd, Mo, Ni, Cr, Cu, Au, Pt, Ir, diamond and the like.

20. A method of forming a device including emitters comprising:
providing a sheet of fiber segments, each fiber segment having a first end and a second end;

exposing said first ends of said fiber segments to a reactive liquid to allow said reactive liquid to react with said first ends to remove material therefrom;

depositing a coating material on said first ends;
depositing a dielectric layer on said coated first ends and attaching a substrate thereto;
exposing said second ends of said fiber segments to a reactive liquid to allow said reactive liquid to react with said second ends to remove material therefrom to expose said coating material;
providing an anode plate including chambers containing color phosphors; and
aligning said chambers with said exposed coating material to form a field emitter device.

21. The method of Claim 20, wherein said reactive liquid comprises a bath of HF acid.

22. The method of Claim 20, wherein said reactive liquid comprises a spray of HF Acid.

23. The method of Claim 20, wherein said coating material comprises a low electron affinity material taken from the group consisting of α -C, PdO_x, Pd, Mo, Ni, Cr, Cu, Au, Pt, Ir, diamond and the like.

24. The method of Claim 20, further comprising:
pumping said field emitter device into vacuum and sealing.